to produce noise creating spinning modes having a number of lobes m, selecting the number of blades B and the number of vanes V so that the least number in absolute value of m given by the equation:

$$m=nB+kV$$

satisfies the condition $m=8$ where n is the harmonic index of noise radiated, B is the number of blades, V is the number of vanes and k is an index that ranges independently over all positive and negative integers.

13. In an axial flow compressor located within a fluid flow confining duct and which produces noise creating spinning modes having a number of lobes m due to interaction between rotating blades and stationary vanes, the method of controlling the noise created in the compressor comprising mounting a stator within the duct having a number of stationary vanes V positioned about the periphery thereof, mounting a rotor for rotation adjacent the stator within the duct and having a selected number of blades B about the periphery thereof so that noise creating spinning modes are developed due to blade and vane interaction, selecting the number of rotor blades B such that at the operating speed N of interest, the frequency of the first harmonic noise is above 7000 c.p.s. using the formula:

$$B \geq \frac{7000}{2N}$$

where 2 is the harmonic index, causing the fundamental frequency noise to decay by selecting the number of vanes V in the stator so that the least number in absolute value of m given by the equation:

$$m=B+kV$$

also satisfies the equation:

$$m \gtreqqless BM_B/M^*_m$$

where k is an index that ranges independently over all positive and negative integers, M_B is rotor tip Mach number, and M^*_m is the critical Mach number for the m-lobe pattern.

14. In an axial flow compressor located within a fluid flow confining case wherein said compressor develops noise creating spinning modes due to rotating blade and stationary vane interaction, which noise creating spinning modes have a number of lobes m, the method of controlling the noise created by the compressor comprising mounting a first fixed stator within the case having a selected number of vanes V positioned about the periphery thereof, mounting a rotor for rotation adjacent the first stator having a particular number of blades B about the periphery thereof so that a first noise creating spinning mode is established due to blade and vane interaction, mounting a second stator adjacent the rotor so that a second noise creating spinning mode is created due to blade and vane interaction, selecting the number of rotor blades B such that at the operating speed N of interest the frequency of the second harmonic noise is above 7000 c.p.s. using the formula:

$$B \geq \frac{7000}{3N}$$

where 3 is the harmonic index, causing the fundamental frequency noise to decay by selecting the number of vanes V in the stators so that the least number in absolute value of m given by the equation:

$$m=B+kV$$

also satisfies the equation:

$$m \gtreqqless BM_B/M^*_m$$

where k is an index that ranges independently over all positive and negative integers, M_B is rotor tip Mach number, and M^*_m is the critical Mach number of the m-lobe pattern, indexing an element of the first blade and vane interaction with respect to an element of the second blade and vane interaction to cause the spinning modes so created thereby to be of equal intensity and opposite phase to cancel the first harmonic noise.

15. In an axial flow compressor located within a fluid flow confining duct and which develops noise creating spinning modes by interaction between blades on rotating rotors and vanes on stationary stators with the number of vanes being different from the number of blades, the method of cancelling noise creating spinning modes formed by a plurailty of interactions comprising selecting the number of blades and the number of vanes such that the propagating modes have the same number of lobes and are of comparable radial intensity distribution, indexing the noise sources by adjusting the relative position between blades and vanes so that the amplitude and phase relations of the noise creating spinning modes yield a zero sum and thereby dispensing the noise.

16. The method of reducing ducted compressor inlet noise in an axial flow compressor within a fluid confining duct comprising assembling a first rotor between first and second equal vaned stators in said flow confining duct, said rotor having a different number of blades than the number of the vanes, then rotating said first stage rotor to establish two noise creating interacting spinning modes at bladle-vane passing frequency including a first noise creating interaction spinning mode at blade passing frequency caused by interaction between the vanes of said first stator and the blades of said first rotor and a second noise creating interaction spinning mode at blade passing frequency produced by the interaction of the blades of said first stage rotor and the vanes of said second stage stator, adjustably positioning said first and second stators with respect to one another so that said first and second noise creating spinning modes are of substantially equal magnitude and out of phase so as to cancel and thereby dispense the noise.

17. The method of reducing ducted compressor inlet noise in an axial flow compressor within a fluid flow confining duct comprising assembling a first bladed rotor between first and second equal vaned stators in the fluid flow confining duct, said rotor having a different number of blades than the number of the vanes, causing said first stage rotor to rotate to establish two noise creating interacting spinning modes at blade frequency including a first noise creating interaction spinning mode at blade-vane passing frequency caused by interaction between the vanes of said first stator and the blades of said first rotor and a second noise creating interaction spinning mode at blade-vane passing frequency produced by the interaction of the blades of said first stage rotor and the vanes of said second stage stator, rotating one of said first and second stators with respect to the other said first and second stators to cause said first and second noise creating interaction spinning modes to be out of phase and cancel.

18. The method according to claim 17 wherein the adjustable positioning of the stators relative to each other is substantially a helical movement relative to the axis of the rotor.

19. The method of reducing compressor inlet noise in an axial flow compressor within a fluid flow confining duct comprising assembling a first bladed rotor between first and second vaned stators within the duct, then causing said first stage rotor to rotate to establish two noise creating interacting spinning modes at blade frequency including a first noise creating interaction spinning mode at blade passing frequency caused by interaction between the vanes of said first stator and the blades of said first rotor and a second noise creating interaction spinning mode at blade passing frequency produced by the interaction of the blades of said first stage rotor and the vanes of said second stage stator, axially positioning said first and second stators with respect to said first rotor so that said first and second noise creating interaction modes are of substantially equal magnitude, circumferentially rotating one of said first and second stators with respect to the other